REMARKS

The September 16, 2010 Office Communication states that applicant's response to the September 18, 2009 Office Action is not fully responsive because applicant did not respond to the rejection of claim 47 or claims 49-51 as set forth in that Office Action. Applicant addresses the rejection of claims 47 and 49-51 below:

Claims Rejected Under 35 U.S.C. §103

Claim 47

In the September 18, 2009 Office Action, the Examiner rejected dependent claim 47 under 35 U.S.C. 103(a) as being unpatentable over Petersen (U.S. 2002/0094327) and Hung *et al.* (U.S. 2003/0171294) as applied to claims 35, 37, 43, 46 and 57, and further in view of Rempel *et al.* (Clin Can Res 6: 102-111, 2000). The basis for this rejection is set forth at pages 7-8 of the previous February 3, 2009 Office Action.

The Examiner asserted that "Rempel *et al.* teaches that the SDF-1 gene encodes two isoforms, SDF-1α and SDF-1β, that arise from alternative splicing (page 102, column 2, last paragraph)." The Examiner alleged that "it would have been obvious to the person of ordinary skill in the art at the time the invention was made to modify the method of intramyocardially or intracoronarily administering SDF-1a to heart tissue as taught by Petersen and Hung *et al.* by substituting SDF-1α with SDF-1β as taught by Rempel *et al.*"

Applicant's Response

In response, applicant respectfully traverses the Examiner's rejection. As discussed in the Communication filed March 18, 2010 in response to the September 18, 2009 Office Action, and further reiterated hereinbelow, Petersen and Hung *et al.* and Rempel *et al.* do not render obvious the method of independent claim 35 from which claim 47 depends.

Claim 35 recites "A method of treating a subject suffering from a disorder of a heart tissue involving loss or apoptosis of cardiomyocytes which comprises intramyocardially or intracoronarily administering to the subject an amount of an agent comprising a human stromal derived factor-1 effective to induce regeneration of endogenous cardiomyocytes and thereby treat the disorder of the heart tissue involving loss or apoptosis of cardiomyocytes in the subject." Claim 47 limits the human stromal-derived factor-1 to "human stromal-derived factor-1β." Applicant maintains that the combination of Hung *et al.*, Rempel *et al.* and Petersen does not teach such a method.

Petersen provides a laundry list of tissues to which SDF-1α could theoretically be administered in order to effect trafficking of "a pluripotent stem cell" to the tissue "from another site" in the subject (e.g. see abstract and paragraph [0063] on page 8). In contrast, the method as currently claimed herein induces regeneration of endogenous cardiomyocytes in a specific tissue. There is no teaching of such a method in the combination of Petersen, Hung *et al.* and Rempel *et al.* The discussion in Petersen of repopulating a damaged tissue with pluripotent stem cells, as cited by the Examiner, is not a disclosure of regeneration of endogenous cells, less so endogenous cardiomyocytes.

There is nothing in Hung et al. to suggest administration of SDF-1 to the heart intramyocardially or intracoronarially. Hung et al. describes two animal models of coronary artery disease, a hibernating myocardium model and an ameriod model:

Hibernating Myocardium Model

Hung et al. states that "[h]ibernating tissue is non-contracting muscle tissue, but is capable of contracting, should it be adequately resupplied with blood" (paragraph [0038]). Applicant notes that Hung et al. classifies heart muscle as "healthy, normal or dead" (paragraph [0038]). Hung et al. then distinguishes "dead or diseased heart tissue" from "hibernating tissue" (paragraph [0038]). Applicant's claimed invention, being directed to a "disorder of a heart tissue involving loss or apoptosis of cardiomyocytes" as recited in claim 35, is thus distinguished from the hibernating model. As such, the hibernating model does not correspond to applicant's claimed invention of treating a disorder of the heart. The data in Hung et al. showing administration of a polypeptide fibroblast growth factor (FGF) intramyocardially to the hibernating model is thus not relevant to subjects "suffering from a disorder of a heart tissue involving loss or apoptosis of cardiomyocytes," as recited in claim 35.

Ameroid Model

Hung et al. also describes the ameroid model in which there is complete occlusion leading to infarction and states that "the 100% occlusion that is provided by the ameroid model makes the ameroid model more analogous to a myocardial infarction" (paragraph [0039]).

Administration of the polypeptide FGF to the ameroid model, however, provided no benefit over placebo (see Figures 7-9 of Hung et al.). Accordingly, Hung et al. shows that administration of FGF to a subject having a diseased heart provided no beneficial effect.

In view of this data present in Hung et al., a person of ordinary skill in the art would have no motivation to treat "a subject suffering from a disorder of a heart tissue involving loss or apoptosis of cardiomyocytes which comprises intramyocardially or intracoronarily administering to the subject an amount of an agent comprising a human stromal derived factor-1" because Hung et al. teaches away from intramyocardial or intracoronarial injection of a polypeptide to treat a subject suffering from a disorder of a heart tissue involving loss or apoptosis of cardiomyocytes.

Thus, even if one used the disclosure of Rempel *et al.* to provide SDF-1β, it would not have been obvious to one skilled in the art at the time the invention was made to use SDF-1α in the claimed method which is not obvious over Petersen *et al.* when combined with Hung *et al.* and Rempel *et al.*

Accordingly, applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection to claim 47.

Claims 49-51

In the September 18, 2009 Office Action, the Examiner rejected dependent claims 49-51 under 35 U.S.C. 103(a) as being unpatentable over Petersen and Hung *et al.* as applied to claims 35, 37, 43, 46 and 57, and further in view of Isner *et al.* (WO 99/45775).

The Examiner acknowledged that Peterson and Hung *et al.* do not teach specific disorders of heart tissue. The Examiner asserted that "Isner *et al.* teaches a method for increasing vascularization comprising administering to a mammal an effective amount of a vascularization modulating agent, such as stromal derived factor-1 (SDF-1)(bottom of page 4 through the top of page 5)." The Examiner asserted that "Isner *et al.* disclose that the methods of the invention have a wide spectrum of uses in human patients, i.e., use in the prevention or treatment of at least cerebrovascular ischemia, ischemic cardiopathy, and myocardial ischemia (page 15, lines 1-5)." The Examiner alleged that "it would have been obvious to the person of ordinary skill in the art at the time the invention was made to modify the method of intramyocardially or intracoronarily administering SDF-1a to heart tissue as taught by Petersen and Hung *et al.* to treat disorders of heart tissue as taught by Isner et al."

Applicant's Response

In response, applicant respectfully traverses the Examiner's rejection. As discussed hereinabove, independent claim 35, from which claims 49-51 depend, is not obvious over Petersen and Hung *et al.* Thus, even if one used the disclosure of Isner *et al.* to treat disorders of heart tissue, it would not have been obvious to one skilled in the art at the time the invention was made to use SDF-1α in the claimed method which is not obvious over Petersen *et al.* when combined with Hung *et al.* and Isner *et al.*

Accordingly, applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection to claims 49-51.